DEPARTMENT OF BOTANY				*CLASS: I M.Sc. Botany*				
Sem	**Course Type**	**Course Code**	**Course Title**	**Credits**	**Contact Hours/week**	**CIA**	**Ext**	**Total**
I	Major Practical 2	**21P1BMP2**	**Practical-II#**	2	4	**40**	**60**	**100**

Nature of Course				
Knowledge and skill	✓		Employability oriented	✓
Skill oriented	✓		Entrepreneurship oriented	

Course Objectives:

1. To observe vegetative and reproductive morphological, features of Pteridophytes and Gymnosperms
2. To train the students to prepare appropriate microsections for the observation of 3D structure of tissues in the vegetative and reproductive structures of gymnosperms and angiosperms
3. To observe spotters of Anatomy, Embryology and morphogenesis interest

Plant anatomy, Embryology and Morphogenesis

1. Tissue maceration – cell wall pattern of xylem vessels
2. Micro-slide preparation and observation of SAM and RAM
3. Micro-slide preparation and observation of primary structure of dicot stem, root and leaf; monocot stem, root and leaf
4. Micro-slide preparation and observation of secondary structure of dicot stem and root.
5. Pollen morphology
6. Pollen germination
7. Pollen viability test
8. Anatomical observation of anther and ovary
9. Separation of pollinium
10. Modes of pollination of different species in the campus
11. Studying pollination mechanisms of different species
12. Dissection of embryo
13. Demonstration of pollen, embryo and endosperm cultures
14. Demonstration of crop improvement techniques
15. Demonstration of permanent slide preparations.

Rationale for Nature of the Course:
Anatomical analysis for the identification and quality of wood and fibre

Activities having direct bearing on Skill development / Employability / Entrepreneurship
Demonstration of permanent slide preparations which will help the students to commercially prepare for educational instituents.

Pedagogy:
Chalk and Talk, PPT, Group Discussion, Seminar, Interaction, Problem Solving, Quiz, Virtual Labs & Learning Management System (CANVAS).

Course Learning Outcomes:

CLOs	CO Statement	Knowledge Level
Students will be able to know, understand, apply, and analyse		
CO -1	the internal morphology of apical meristems, primary structure of dicot stem and root, monocot stem and root	Up to K4
CO -2	the normal and anomalous secondary structure of dicot stem	Up to K4
CO -3	the pollen morphology, germination and its viability	Up to K4
CO -4	the structure and types of ovules, structure of dicot and monocot embryo	Up to K4
CO -5	the demonstration of culturing pollen, embryo and endosperms; demonstration of crop improvement techniques	Up to K4

Mapping Programme Specific Outcomes with Course Outcome:

	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5
CO-1	-	2	1	3	2
CO-2	-	1	2	2	2
CO-3	-	2	3	2	3
CO-4	-	2	2	2	3
CO-5	-	3	2	3	2

3-Advance application, 2- Intermediate level, 1- Basic level

Lesson plan

S. No	Description	Hrs	Mode
II	1. Tissue maceration – cell wall pattern of xylem vessels	4	Experiments, demonstration and videos
	2. Micro-slide preparation and observation of SAM and RAM	2	
	3. Micro-slide preparation and observation of primary structure of dicot stem, root and leaf; monocot stem, root and leaf	6	
	4. Micro-slide preparation and observation of secondary structure of dicot stem and root.	6	
	5. Pollen morphology	2	
	6. Pollen germination	4	
	7. Pollen viability test	4	
	8. Anatomical observation of anther and ovary	4	
	9. Separation of pollinium	2	
	10. Modes of pollination of different species in the campus	6	
	11. Studying pollination mechanisms of different species	6	
	12. Dissection of embryo	2	
	13. Demonstration of pollen, embryo and endosperm cultures	4	
	14. Demonstration of crop improvement techniques	4	
	15. Demonstration of permanent slide preparations.	4	

Course Designers: **Dr. S. Karuppusamy**

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